— Provisions for temporary placement of Scientists and Technocrats under the scheme of Scientists Pool.

— Creation of supernumerary Posts.

— Invitation to distinguished men and women of Indian origin settled abroad for short term technical assignments to assist in frontier and emerging areas of S&T.

— Creation of a Special Cell in the Ministry of Industry for assisting non-resident Indians for setting up of industrial units in this country. Some states have also set up special cells and Departments for this.

— Provision of facilities for import of equipment for professionals returning from abroad.

Study of Jupiter Collisions

446. MISS SAROJ KHAPARDE: Will the PRIME MINISTER be pleased to state:

(a) whether it is a fact that a group of Indian Scientists have been studying the impact of the Shoemaker Levy Nine Comet's collision with the planet Jupiter; and

(b) if so, what are the details of the findings of the study by the group?

THE MINISTER OF STATE IN PRIME MINISTER'S OFFICE AND MINISTER OF STATE IN DEPARTMENTS OF ATOMIC ENERGY, SPACE AND IN THE MINISTRY OF SCIENCE AND TECHNOLOGY (SHRI BHUVNESH CHATURVEDI): (a) Yes, Sir. Scientists from several organisations in the country have been studying the impact of Comet Shoemaker Levy-9 with the planet Jupiter.

(b) 200 high quality images of this collision wtre obtained through 6 filters in various wavelength ranges by the Indian Institute of Astrophysics (ILA), Bangalore from the Vainu Bapu Observatory, Kavalur. These images indicate that the collision was powerful and left prominent changes in the visible appearance of the atmosphere of Jupiter. Change in the intensity of methane bands and emission of intense radiation from heated clouds of gas (which mushroomed over the atmosphere) were noticed.

Series of fast images were obtained at Japal Rangapur Observatory, Hyderabad with the help of a CCD Camera. The photographs obtained show the dark regions of crash sites.

Techniques of radio astronomy were also employed to monitor this event. Scientists at the Raman Research Institute, Bangalore detected several fold increase in micro emission from Jupiter lasting for a new minutes after the impact of the E-component.

Analysis and interpretation of the large amount of data collected by various groups are expected to continue for some time come.

Indo-Ukraine joint space research project

447. SHRI RAHASBIHARI BARIK: Will the PRIME MINISTER be pleased to state:

(a) whether some joint space research projects are proposed to be launched by India and Ukraine;

(b) if so, what are these space research projects;

(c) by when these projects are proposed to be launched; and

(d) the steps taken in the matter?

THE MINISTER OF STATE IN PRIME MINISTER'S OFFICE AND MINISTER OF STATE IN THE MINISTRY OF SCIENCE & TECHNOLOGY AND MINISTER OF STATE IN THE DEPARTMENTS OF ATOMIC ENERGY AND SPACE (SHRI BHUVNESH CHATURVEDI): (a) Yes, Sir.

(b) and (c) The Umbrella Agreement between India and Ukraine on cooperation in Space has been signed